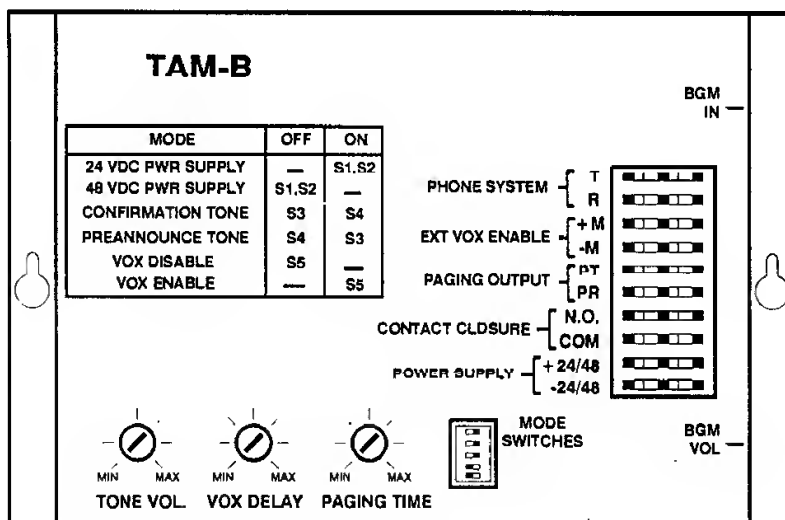


Telephone Access Module Model TAM-B

Installation Instructions



BOGEN®

Federal Communications Commission (FCC) Statement (Part 68)

This equipment is component registered with the Federal Communications Commission (FCC) in accordance with Part 68 of its rules. In compliance with the rules, be advised of the following:

Registered equipment may not be used with Coin Telephone Lines. Equipment may be used with Party Lines in areas where state tariffs permit such connections and when equipment is adaptable for such service.

This equipment is registered as follows:

Registration Number - CD23CH-17705-KX-N

Ringer Equivalence - 1.2B

If trouble is experienced, the equipment should be disconnected from the interface to determine if this equipment, or the telephone line is the trouble source. If the equipment is determined to be malfunctioning, it should not be reconnected until repairs are effected.

Repairs to this equipment, other than routine repairs, can be made only by the manufacturer or its authorized agents.

If the equipment causes harm to the telephone network, the local telephone company may temporarily discontinue your service and, if possible, notify you in advance. If advance notice is not practical, you will be notified as soon as possible. You will be given the opportunity to correct the problem and informed of your right to file a complaint with the FCC.

The local telephone company may make changes in its facilities, operations, or procedures that could affect the proper functioning of your equipment. If they do, you will be given adequate notice in writing to allow you an opportunity to maintain uninterrupted telephone service.

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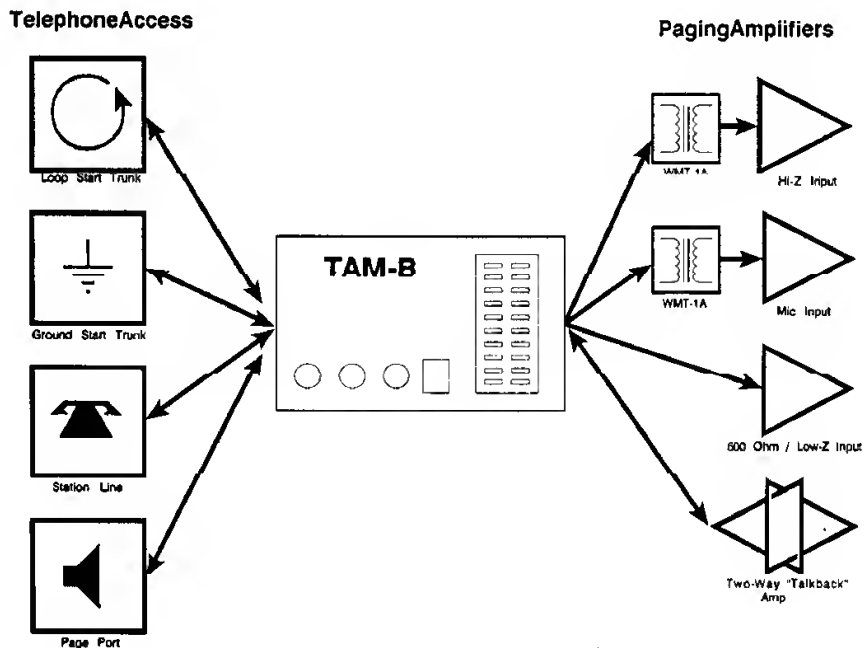
1. Product Identification

TAM-B Telephone Paging Access Module

The TAM-B Paging Adaptor is designed to provide telephone access to most commonly available paging systems. It works with PBX loop- and ground-start trunk ports and station ports, and is compatible with the full range of currently available telephone equipment, i.e., PABX, stand-alone 1A2-Key, Electronic Key, Hybrid Electronic Key, or CO and Centrex.

Overview

The TAM-B provides telephone and paging systems connections, BGM Input and modular page port connector, as well as mode setting switches and adjustment controls. The unit is compact, housed in a black steel case and is designed to be mounted on a wall.



Features

- **24V or 48V operation (trunk port operation)**

Mode switches let you select for operation with 24V or 48V power supply.

- **Preannounce and Confirmation Tones**

A preannounce tone (heard at the telephone and the loudspeakers) or confirmation tone (heard only at the telephone) can be selected with mode switches. (one of these modes must be selected for the unit to operate properly). A screwdriver-adjustable control (**TONE VOL**) sets the level of each.

Note: when used with ground-start trunk ports, only the preannounce option can be used.

- **VOX Delay Timer**

Voice controlled disconnect timer, for use with station port operation is enabled with a mode switch. This automatically disconnects the line after a predetermined interval of silence (from 2 to 6 seconds, set with the **VOX DELAY** control; the setting may be critical with telephone systems that issue a rapid reorder tone after the paging party hangs up)

- **Default Timer**

A default timer sets the maximum time allotment for paging (6 to 35 seconds, set with the **PAGING TIME** control). This timer ensures that the unit will always disengage the line if the other disconnect functions are disabled or not available with a specific telephone switch.

- **Background music input jack and volume control**

An RCA-type jack (**BGM IN**) accepts background music sources from the paging system. The level can be set with the **BGM VOL** control.

- **Contact Closures**

One normally-open contact closure is provided on the TAM-B which changes state when the unit is activated. The set is located on the punch block (terminals **N.O.** and **COM**), and can be used for ground start operation.

2. Connection to the Telephone System

General Instructions

This section contains installation procedures for connection to the telephone system. You should first follow the General Instructions and then refer to the Specific Instructions for the type of telephone switch to be connected (PBX or Key system loop- & ground ports, station port, page port). Finally, refer to Section 3 for connections to the paging system.

You will need the following tools for installation: standard flat blade screwdriver; phillips-head screwdriver; wire cutters/stripper/crimper; punch-down tool for Type 66 Block.

Select location and physical installation

The TAM-B may be mounted on a wall or backboard. It should be located in close proximity to the telephone equipment or near the paging equipment. To install the unit using the keyhole slots, install two screws on a 7-1/2" center, letting the screw heads protrude 1/4" from the wall. Position the unit on the screws through the slots and then tighten the screws. A 110V AC outlet should be located nearby when using the TAM-B with trunk port equipment.

Punch Block Connections

All wiring to the punch block must be 26AWG to conform to National Electric Code ANSI/NFPA No. 70-1987.

Grounding



The TAM-B is designed with protection devices which are intended to shunt to ground any excess (surge) voltage appearing on the Tip and Ring Input pair. The metal case of the TAM-B must be grounded to a ground shorting bar, if available, or to a suitable electrical (earth) ground. Connect a ground wire to the fork-terminal (included between the case and the screw on the lower corner of the module). An external-tooth lockwasher ensures a good connection between the case and the ground terminal. To conform with National Electric Code ANSI/NFPA No. 70-1987, use 14AWG or larger wire with green/yellow insulation.

Mode switches (on front of unit)

A set of 5 mode switches (S1 through S5) is included to set the power supply voltage, confirmation or preannounce tone, and VOX operation. These switches are accessible through an opening in the front cover and can be moved with a pointed tool, such as the tip of a ball point pen. Set the switches as described in the Specific Instructions, which follow.

Power supply connections

No power supply is required when the TAM-B is connected to a PABX station port (supplying analog ring voltage and approx. 48V of Talk Battery) or CO or Centrex line. A power supply is required to provide 24 or 48 volt talk battery for PBX or Key system trunk port or page port operation. The illustrations in the Specific Instructions section show the correct connections from a typical power supply to the TAM-B module.

Auxiliary Switch Bank (on top of unit)

Certain options are available (described in the Specific Instructions Section) and are selected by setting DIP switches on the AUX switch bank, accessible through an opening in the top of the TAM-B case.

Paging system connections

Illustrations showing connection of the TAM-B to a typical paging system are included in the third section of this manual.

Troubleshooting

A Functional Test Guide in Section 4 isolates problem areas, if they arise, following installation.

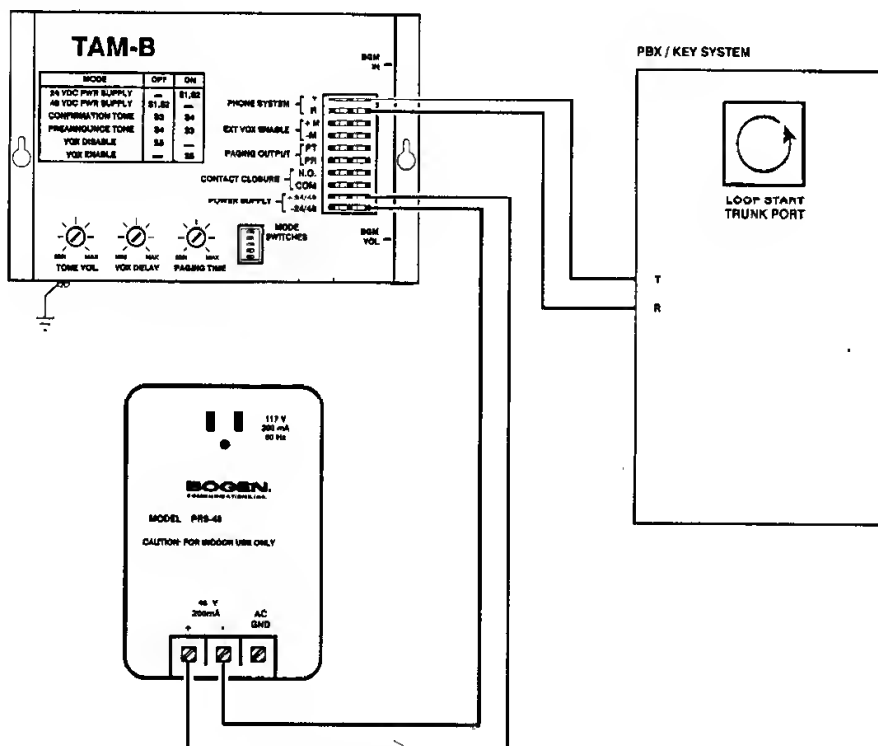
Specific Instructions

Trunk Port Connections – Loop Start

Controls for VOX Delay, Page Time, Mode Switch S5, and AUX Switches S1, S2, S3, and S5 are not operable in this mode

Procedure

1. Mount and ground the TAM-B as described in the General Instructions.
2. Set **MODE** switches S1 and S2 in **OFF** position for use with the 48-volt power supply, or **ON** position if a 24-volt power supply is used.
3. Set **MODE** switches S3 and S4 for Preannounce or Confirmation tone (as desired). See chart on TMA B case
4. Set **AUX.** switch S4 to **ON** position.
5. Connect "Tip" of trunk port to **T** terminal on TAM-B.
6. Connect "Ring" of trunk port to **R** terminal on TAM-B.
7. Connect **PT** and **PR** terminals on TAM-B to the paging system, as shown in Section 3. Also, connect any background music source to the **BGM IN** jack on the TAM-B.
8. Connect power supply + and - terminals to the +24V/48V and -24V/48V terminals on TAM-B, respectively. Plug the power supply into a grounded 110VAC wall outlet.
9. Call the system and adjust the volume of the page using the paging system's amplifier volume control.
10. Hang up and adjust the background music level using the TAM-B **BGM VOL** control.
11. Call the system and adjust the volume of the preannounce/confirmation tone, using the TAM-B **TONE VOL** control.



Trunk Port Connections – Loop Start

Specific Instructions

Trunk Port Connections – Ground Start

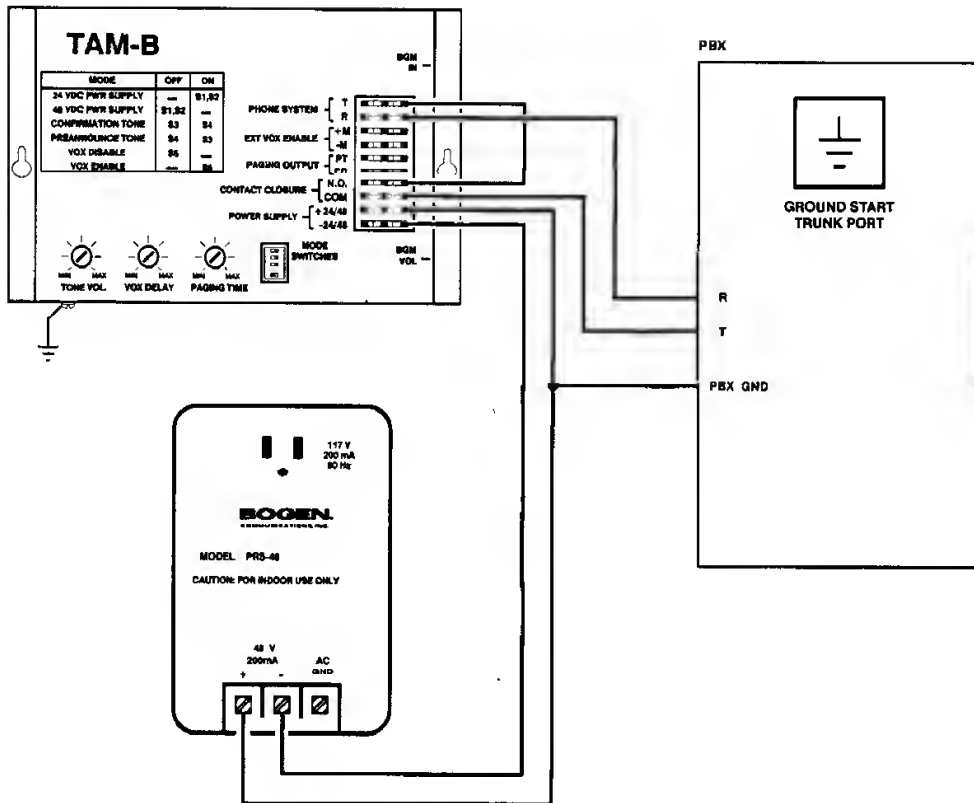
Controls for VOX Delay, Page Time, Mode Switch S5, and AUX Switches S1, S2, S3, and S5 are not operable in this mode.

Procedure

1. Mount and ground the TAM-B as described in General Instructions.
2. Set **MODE** switches **S1** and **S2** in OFF position for use with the 48-volt power supply, or ON position if a 24-volt power supply is used.
3. Set **MODE** switch **S3** to ON position and **S4** to OFF position (see Note 1).
4. Set **AUX.** switch **S4** to ON position.
5. Connect "Tip" of trunk port to **COM** terminal on TAM-B.
6. Connect "Ring" of trunk port to **R** terminal on TAM-B.
7. Connect **PT** and **PR** terminals on TAM-B to the paging system, as shown in Section 3. Also, connect any background music source to the **BGM IN** jack on the TAM-B.
8. Connect TAM-B +24/48V terminal to PBX ground (See Note 2).
9. Connect power supply + and - terminals to +24V/48V and -24V/48V terminals on TAM-B, respectively. Plug the power supply into a grounded 110VAC wall outlet.
10. Call the system and adjust the volume of the page using the paging system's amplifier volume control.
11. Hang up and adjust the background music level using TAM-B **BGM VOL** control.
12. Call the system and adjust the volume of the preannounce tone using TAM-B **TONE VOL** control.

NOTES:

1. Only preannounce tone is available for ground start trunk applications.
2. Usually the **AC GND** terminal on the Bogen Model PRS-48 power supply can be used to provide this connection.



Trunk Port Connections — Ground Start

Specific Instructions

Station Port/Centrex Connections

Disconnect Methods

In station port operation, the TAM-B provides CPC — calling-party-controlled (loop current interruption) disconnect, default timer disconnect, and optional voice-operated (VOX) disconnect. The calling-party-controlled disconnect recognizes a line-issued disconnect signal and immediately disengages the TAM-B from the line (this feature cannot be adjusted or inhibited). The default timer causes the TAM-B to release after a user-determined period of time ensuring that the TAM-B will always disengage the line if the other disconnect functions are disabled or inoperative. The voice operated (VOX) disconnect feature has the ability to preempt the default timer and disconnect the line after a predetermined interval of silence (approx. 2 to 6 seconds, set with VOX DELAY) has elapsed. The VOX feature is turned on or off with mode switch S5.

Procedure

No power supply is used for Station Port/Centrex operation. Mode switches S1 and S2 and AUX Switches S12 and S2 are not operable.

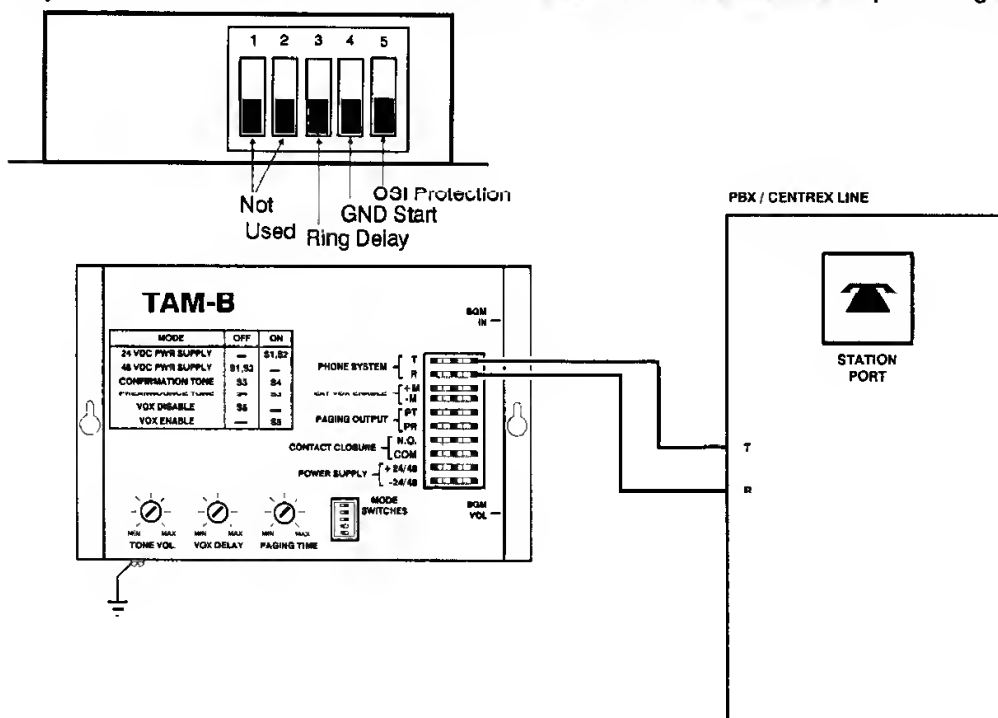
1. Mount and the ground the TAM-B as described in General Instructions.
2. Set **MODE** switches **S3** and **S4** Preannounce or Confirmation tone (as desired). See chart on TAM-B case. **One of these modes must be selected for TAM-B to operate correctly.**
3. Set **MODE** switch **S5** in the OFF position.
4. Set **AUX.** switches **S3, S4** and **S5** In ON position.
5. Connect "Tip" of station port to T terminal of TAM-B.
6. Connect "Ring" of station port to R terminal of TAM-B.
7. Connect PT and PR terminals on TAM-B to the paging system, as shown in Section 3. Also, connect any background music source to the BGM IN jack on the TAM-B.
8. Set the Default timer by calling the system and measuring the length of time before the call is disconnected. Adjust the **PAGING TIME** control and repeat and readjust as necessary.
9. Call the system and set the page volume using the paging system's amplifier volume control.
10. Hang up and adjust the background music level using TAM-B **BGM VOL** control.
11. Call the system and adjust the volume of the preannounce/confirmation tone using the **TONE VOL** control. (Note: If the tone can be heard over the paging system but is shortened, or if it is absent in the handset, it may be necessary to increase the length of ring before the TAM-B answers. See Ring Delay on page 8.)
11. If the VOX disconnect is to be used, adjust the VOX delay. To do this, make sure mode switch S5 is in the ON position and proceed as follows:
 - 11.1 Rotate **VOX DELAY** control approximately 1/2 way.
 - 11.2 Call the system and, after the preannounce or confirmation tone, speak into the telephone for 5 seconds at a normal voice level then stop and evaluate the time delay before disconnection. It should be sufficiently long to allow for pauses in phrases without disconnecting. If necessary, readjust **VOX DELAY** and repeat step.
Note: The minimum VOX delay is approximately 2 seconds. On some systems, which return a reorder tone to the called party within 2 seconds of hang up, VOX DELAY cannot be used.

Important Centrex modification

Some phone systems (in particular, Centrex-type systems) may produce open-switch-intervals (OSIs) when the TAM-B first answers the line. OSIs are short breaks in loop current resulting when the central office switches equipment on and off the line. The TAM-B may misinterpret these OSIs as disconnect signals. It may be necessary to set AUX. switches S4 and S5 in their OFF positions (see the drawing below for the location of these switches) if the TAM-B exhibits any of the following symptoms during station mode operation.

Symptoms:

1. TAM-B disconnects from the line immediately after answering.
2. TAM-B answers and remains connected to line but the page audio does not come through the paging system. This condition is verified if the TAM-B external contact closures are still open during a page.



Station Port/Centrex Connections.

Ring delay

Setting AUX. switch S3 in the OFF position increases the length of time it takes to answer the ringing line. This allows time for a talk path to be established before the TAM-B answers, thereby ensuring that the preannounce or confirmation tone will be heard. Central office or Centrex lines, which may be slower than other switching equipment, may require this change.

3. Connection to the Paging System

General Guidelines

The TAM-B is designed to connect to typical "centrally-amplified" and "self-amplified" paging and sound systems. "Centrally-amplified" systems generally use one amplifier to distribute the page audio to large numbers of speakers. "Self-amplified" systems generally rely on small amplifiers, built-in on each speaker or horn. Since the types of connectors used on this equipment varies, and is not standard between manufactures, you should be familiar with the basic features of these systems so that you can connect the TAM-B to the correct input.

Installation consists of connecting the **PR** and **PT** terminals on the TAM-B to the proper paging system input terminals. In a central-amplified system, the amplifier's 600-ohm/Lo-Z input provides the ideal connection; however connection can be made to Hi-Z or microphone inputs, when a transformer (Model WMT-1A) is used. In self-amplified systems connection can be made to the individual amplifiers or to a smaller buffer amplifier.

The illustrations in this section provide basic hookup information to typical equipment, and **procedures may vary**.

You should be aware that certain self-contained, customer-owned paging systems (i.e. Terryphone) are not compatible with TAM-B installation. These systems were originally installed with dedicated telephones or handsets. They were not designed to work in conjunction with a telephone system, and provide no compatibility for page port access.

Typical Installations

Connecting the TAM-B to an amplifier's Lo-Z/600-ohm input

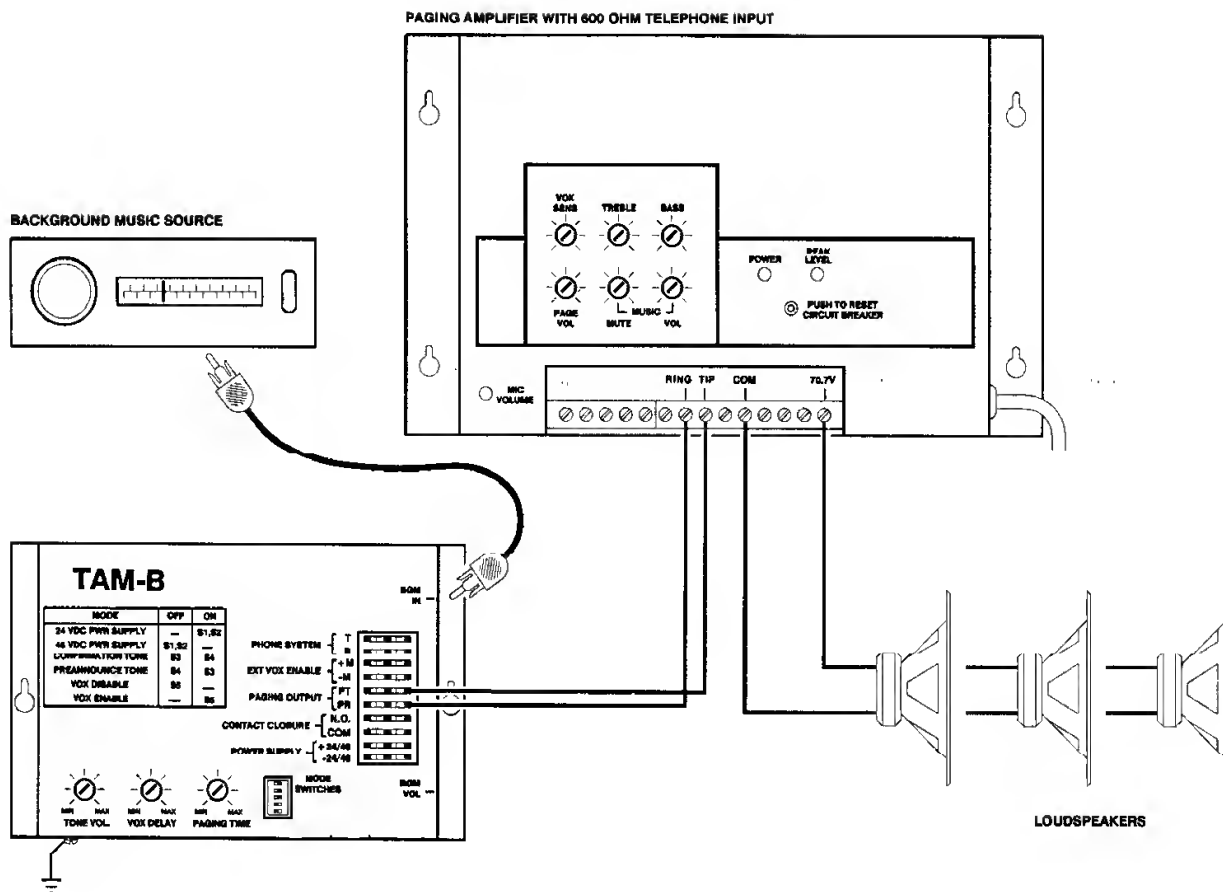
You can connect the TAM-B directly to an amplifier's 600-ohm input. Some of the procedures below may vary. The drawing on the next page shows a typical installation.

1. Make sure that the amplifier is turned off.
2. Connect one side of the amplifier input to the TAM-B **PT** terminal.
3. Connect the other the other side of the amplifier input to the TAM-B **PR** terminal.
4. Connect any BGM source to the **BGM IN** jack (RCA-type) on TAM-B.

Caution

If the amplifier's input is unbalanced (one side of the terminal is connected to ground), you must connect the **PR** terminal on the TAM-B to the grounded amplifier terminal. Reversing these connections can short the BGM source output. (The WMT-1A transformer can be used to "float" the unbalanced input and eliminate this problem.)

5. Connect speaker loads to amplifier's output terminals, if necessary.
6. Turn amplifier volume control to minimum.
7. Turn on amplifier.
8. Set amplifier level (see Specific Instructions for the particular telephone access mode being used).

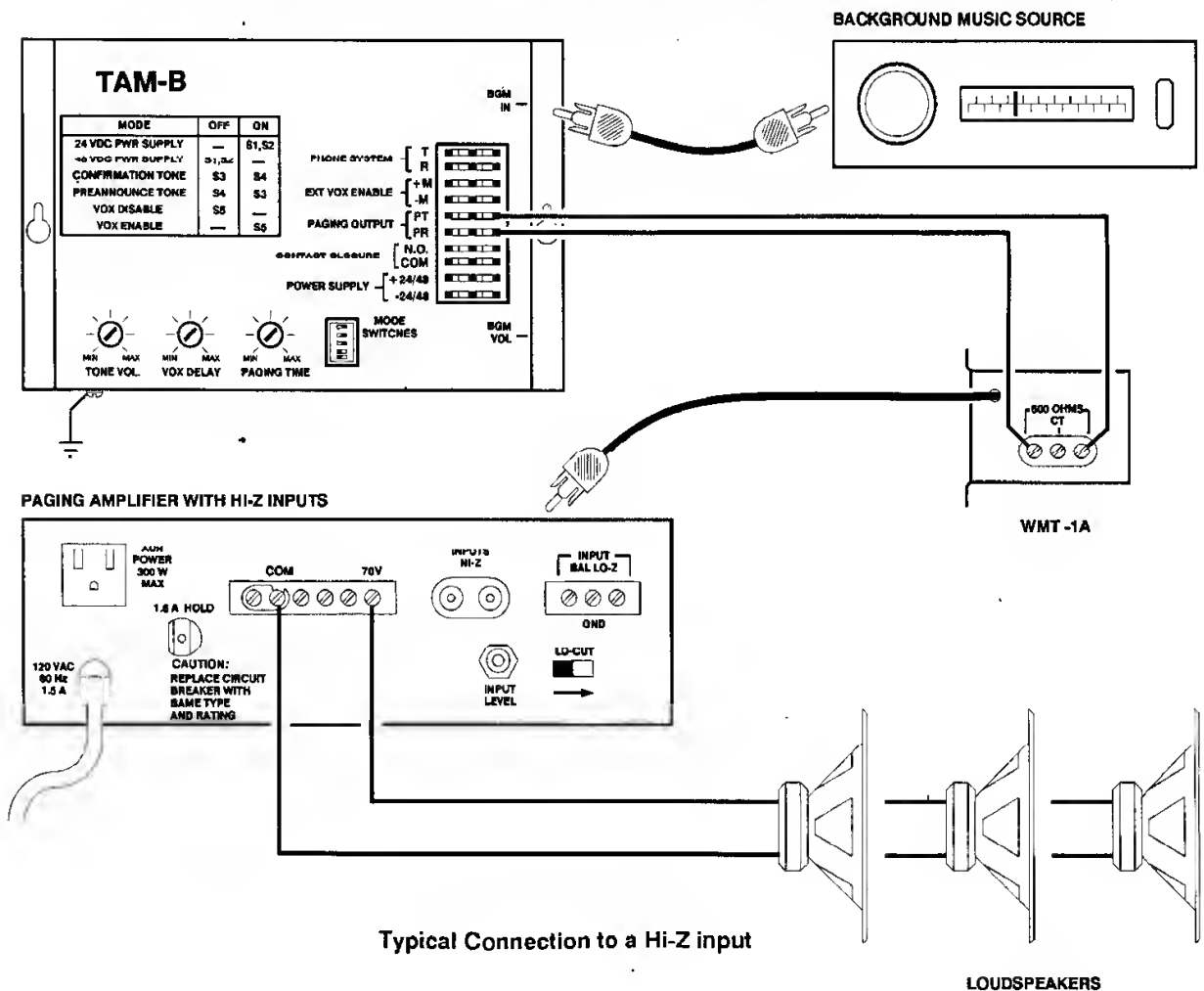


Typical Connection to a Lo-Z/600 ohm input

Connecting the TAM-B to an amplifier's Hi-Z AUX input

You can connect the TAM-B to an amplifier's Hi-Z Input by using the Model WMT-1A transformer to match the TAM-B output to the amplifier input. See the instructions included with the transformer for connection details.

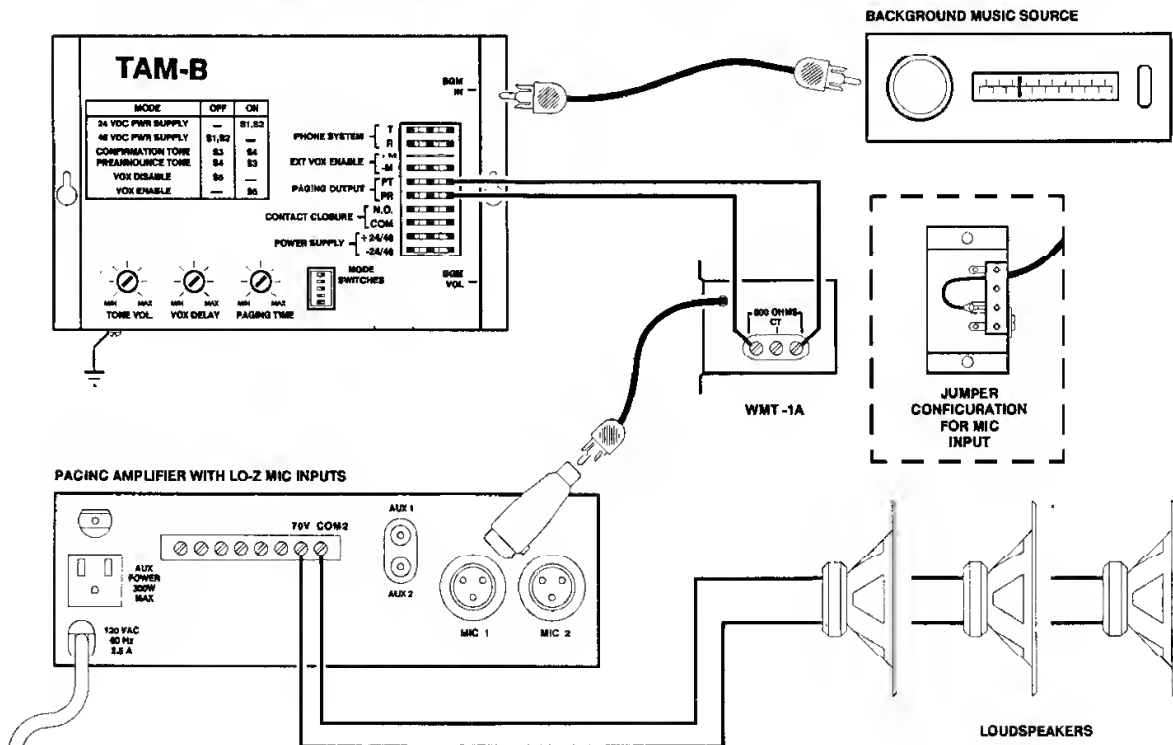
1. Make sure that the amplifier is turned off.
2. Connect **PT** terminal of the TAM-B to one of the outside screw terminals on the WMT-1A.
3. Connect **PR** terminal of the TAM-B to the other outside screw terminal on the WMT-1A.
4. Plug the RCA-type connector from the WMT-1A transformer into the amplifier's Hi-Z input Adaptors are included in the kit for connecting to 1/4" phone and mini-jack inputs.
5. Connect any background music source to **BGM IN** jack (RCA-type) on TAM-B.
6. Connect speaker loads to the amplifier's output terminals, if necessary.
7. Turn amplifier volume control to minimum.
8. Turn amplifier on.
9. Set amplifier level (see Specific Instructions for the particular telephone access mode being used).



Connecting the TAM-B to an amplifier's MIC input

Due to the higher sensitivity of microphone inputs, they should be used only as a last resort. The Lo-Z microphone connection is the more desirable of the two because it is less susceptible to noise pickup. The TAM-B connects to the MIC input using a Model WMT-1A transformer. This transformer includes a modification to provide the proper attenuation (see instructions packed with the transformer).

1. Make sure the amplifier is turned off.
Modify the WMT-1A transformer by moving the push-on lug to the center terminal on the terminal strip (see Inset diagram in the figure below for proper jumper placement).
2. Connect **PT** terminal of the TAM-B to one of the outside screw terminals on the WMT-1A.
3. Connect **PR** terminal of TAM-B to the other outside screw terminal on the WMT-1A.
4. Connect a suitable adaptor to the RCA-type plug on the WMT-1A (if required).
5. Connect any background music source to **BGM IN** jack (RCA-type) on TAM-B.
6. Connect speaker loads to the amplifier's output terminals, if necessary.
7. Set amplifier volume to minimum.
8. Turn amplifier on.
9. Set amplifier level (see Specific Instructions for the particular telephone access mode being used).

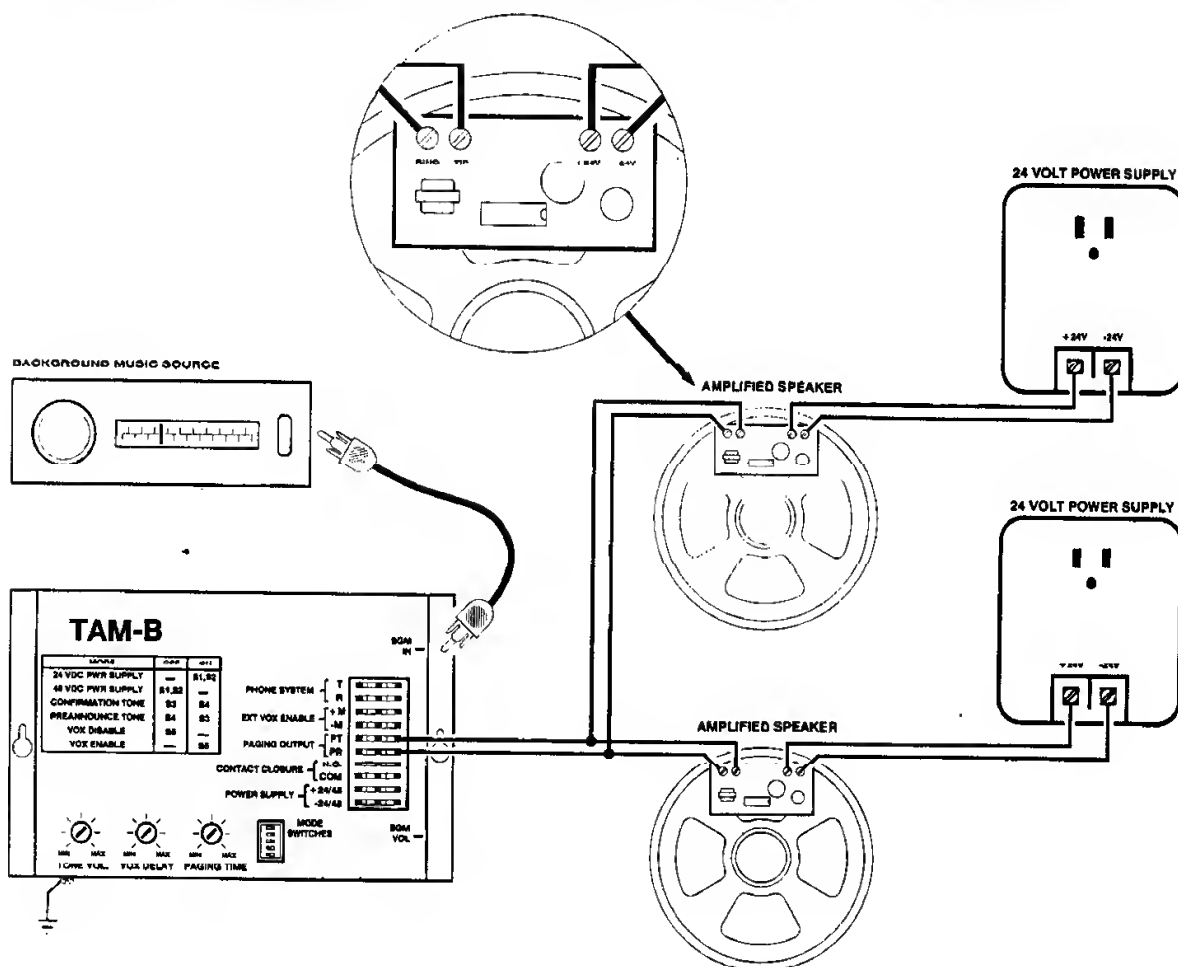


Typical connection to a MIC input

Connecting the TAM-B to a self-amplified paging system

Connection to a self-amplified system usually consists of connecting the TAM-B output to the line feeding the system's individual amplifiers. In some cases, connection can be made to a small buffer amplifier, which is used in some systems to provide an adequate signal level for multiple speakers.

1. Most self-amplified systems operate at low voltages and do not present a shock hazard. If possible, however, turn off the power supplies.
2. Connect **PT** terminal of the TAM-B to the distribution line from the amplifier's "Tip".
3. Connect **PR** terminal of the TAM-B to the distribution line from the amplifier's "Ring".
4. Connect any background music source to the **BGM IN** jack (RCA-type) on the TAM-B.
5. Adjust the volume level. Self-amplified systems usually provide a volume control at each speaker.



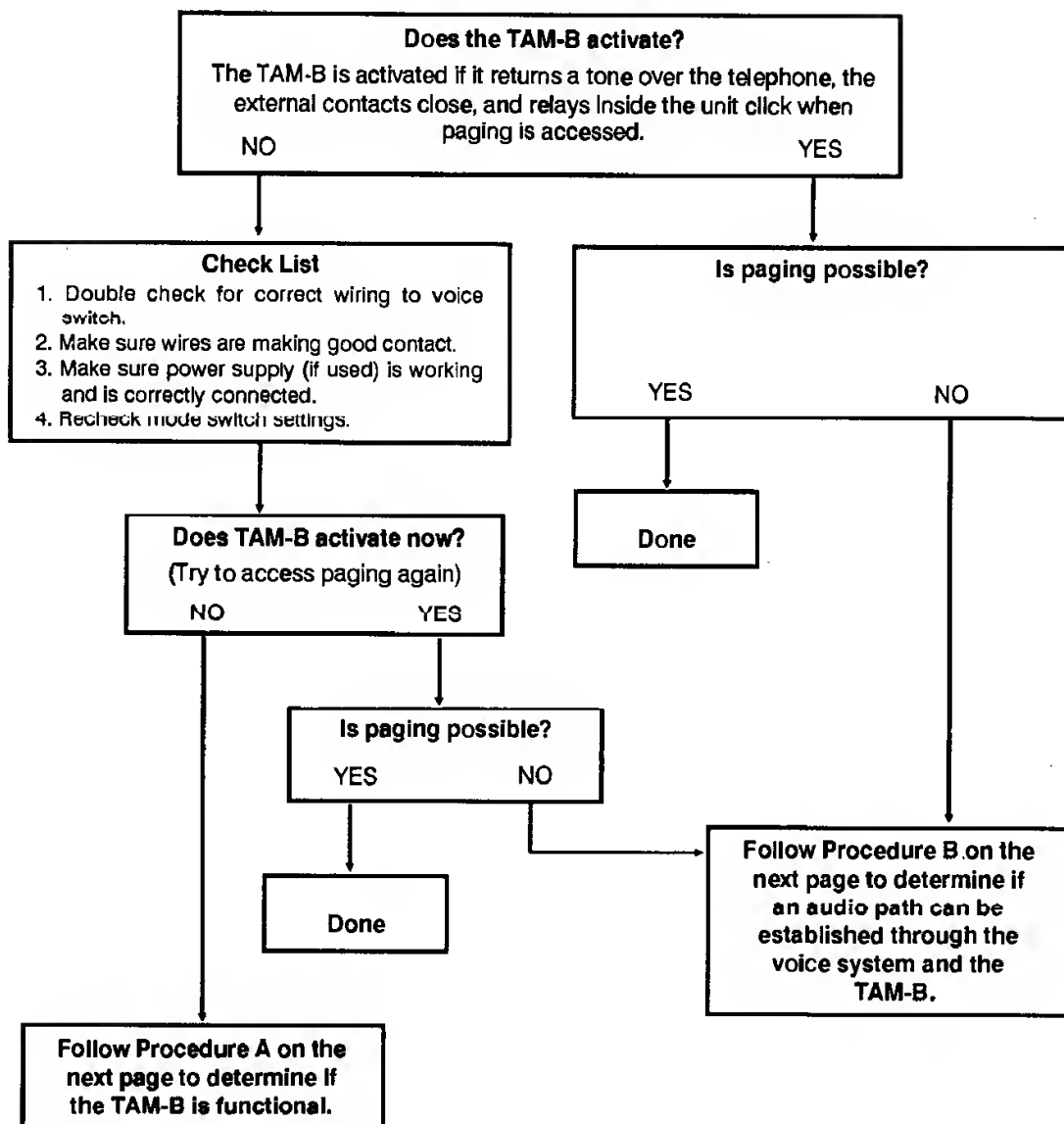
Typical connection to a self-amplified paging system

4. TROUBLESHOOTING

Functional Test Guide

Use the following guide to troubleshoot problems that arise after installation.

To start the test, pick up a telephone and call the TAM-B.



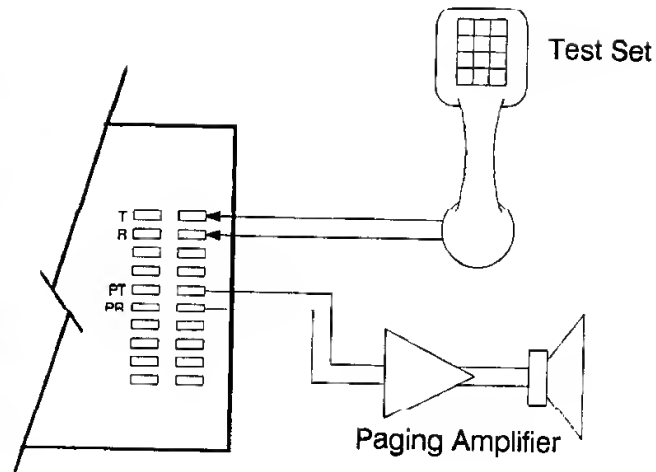
Procedure A

1. Disconnect the TAM-B from the telephone equipment.
2. Confirm that the power supply is properly connected and that the mode switches are in the correct positions (make sure mode switches S3 and S4 are not on the same position).
3. Connect a test set to T & R terminals on TAM-B (test set should be on hook).
4. Take test set off hook.

If the TAM-B activates and you can make a page, the TAM-B and paging system are functioning correctly. The problem must be with the voice switch or interface wiring.

If the TAM-B does not activate, it may be defective. Swap out with another TAM-B if possible.

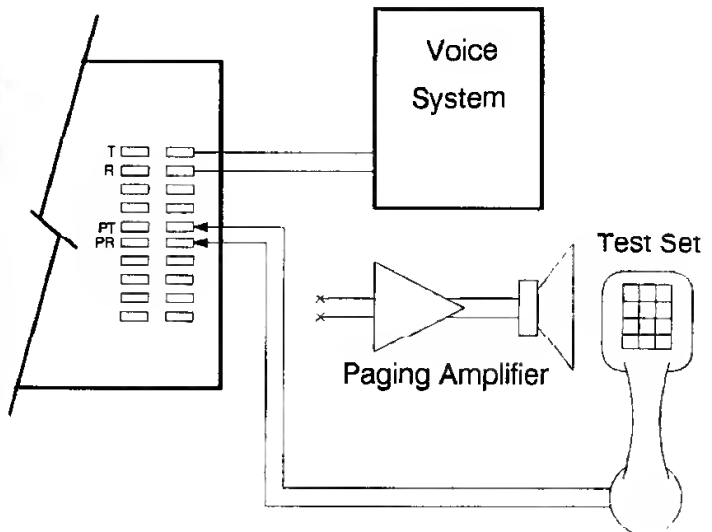
If the TAM-B activates, but paging is not possible, perform Procedure B

**Procedure B**

1. Disconnect the TAM-B from the paging system.
2. Connect a test set to PT & PR terminals on TAM-B.
3. Place the test set in the monitor position.
4. Make a page from a telephone system phone. Listen to the test set. Audio should be comfortably loud (approximately telephone level) and not distorted.

If audio is loud and clear, the paging interface is working correctly. The problem must be in the paging system.

If audio is not heard, the TAM-B may be defective. Swap out with another TAM-B if possible.

**Troubleshooting Notes****Latching relays**

Under certain circumstances, the installation procedure may jar the latching relays, causing a busy tone to be heard in the handset when you try to call the TAM-B. When connected to a station port, the relays will reset when the default timer activates. On ground start trunk ports, short terminals T & R to reset the relays.

Ring Delay

If the preannounce/confirmation tone can be heard over the paging system, but is shortened, or absent in the handset, it may be necessary to increase the length of ring before the TAM-B answers. See Ring Delay in Section 2 for the procedure to follow to increase the delay.

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COMMUNICATIONS, INC.

We make it easier to communicate.
50 Spring Street, Ramsey, NJ 07446
(201) 934-8500 Fax: (201) 934-9832